



## DEPARTMENT OF THE NAVY

NORTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
PHILADELPHIA PENNSYLVANIA 19112

11300

1142/DS

1 FEB 1985

From: Commanding Officer, Northern Division, Naval Facilities Engineering Command  
To: Commander, Naval Facilities Engineering Command  
Subj: LEAD CONTAMINATION AND ENVIRONMENTAL IMPACTS OF PISTOL AND RIFLE RANGE OPERATIONS AT NAVAL SHORE FACILITIES; STUDY OF  
Ref: (a) NACIP Initial Assessment Study of NAEC Lakehurst, NJ; NEES 13-008; March 1983  
(b) NACIP Initial Assessment Study of NWS Earle, NJ; NEES 13-020; February 1983  
(c) NTC Great Lakes ltr 11000 Memo N5 3666 of 4 Dec 84 (NOTAL)  
Encl: (1) EPA Region II ltr of 21 Dec 83 (w/encl)  
(2) NORTHNAVFACENGCOM ESR No. 21-696-250 of SEP 84

1. References (a) and (b) identified closed rifle and/or pistol ranges as being potential sources of lead contamination. The U.S. Environmental Protection Agency (EPA), in enclosure (1), also expressed concern that under acid soil conditions the potential exist for heavy metal bullet constituents to migrate with groundwater.

2. Enclosure (2) was prepared to assess the extent of environmental contamination from an active rifle range at Naval Training Center (NTC) Great Lakes. NTC Great Lakes was informed that a groundwater monitoring array would have to be installed and groundwater samples collected and analyzed to verify the existent of lead (heavy metal) contamination. Reference (b) indicated that funding was not currently available for the groundwater monitoring.

3. The question of lead and heavy metals contamination from rifle and pistol ranges (both closed-NACIP-and active-pollution abatement) is a potential problem Navy wide. It is suggested, therefore, that a study be initiated to determine if lead and heavy metals from pistol range operations are leachable and a source of groundwater contamination under various environmental and climatic conditions. The study should recommend (1) appropriate course(s) of action to be taken at both closed and operating ranges; (2) funding responsibilities for both closed and operating ranges, (3) and if appropriate, remediation alternatives that should be considered.

*Technology  
FAC*

Subj: LEAD CONTAMINATION AND ENVIRONMENTAL IMPACTS OF PISTOL AND RIFLE RANGE  
OPERATIONS AT NAVAL SHORE FACILITIES; STUDY OF

4. If there are any questions concerning the subject matter, contact Mr.  
David Smith, Autovon 443-6280.

A. RHOADS  
By direction

Copy to  
NTC Great Lakes  
PWC Great Lakes  
NWS Earle  
NEESA

*FBI Rifle Range*

*Ref*

Sub ENVIRONMENTAL  
CONTAMINATION

-5000

11000  
Memo N5 3666

04 DEC 1984

MEMORANDUM

From: Commander, Naval Training Center, Great Lakes  
To: Commanding Officer, Northern Division, Naval Facilities  
Engineering Command, Philadelphia

Subj: ENVIRONMENTAL CONTAMINATION IN CONNECTION WITH DISPOSAL  
OF THE NTC RIFLE RANGE

Ref: (a) NORTHNAVFACENGCOM ESR No.21-696-250 dtd September 1984

1. Reference (a) provided an initial assessment of the extent of environmental contamination of the 14.15 acre rifle range located at the northeast corner of Great Lakes Naval Training Center. The report concluded that lead contamination was probable. An A&E study to determine the extent of contamination would be pursued upon notification from NTC Great Lakes that appropriate funding in the amount of \$25,000 was available.

2. The report also stated that NAVFAC funding would be sought for a study to determine if the lead contamination is adversely impacting the environment and whether site specific lead contamination studies should be performed.

3. Funding in the amount of 25,000 dollars is not currently available for an A&E study. NORTHNAVFACENGCOM is requested to pursue NAVFAC funding for a study as mentioned in paragraph 2 above. Since the rifle range is presently used by the FBI, we concur that it makes sense for the Navy to determine the present extent of lead contamination for record purposes.

G. R. RODRIGUEZ  
By direction

Copy to:  
PWC (Code 350)

N53 NTC

ENGINEERING SERVICE REQUEST NO. 21-696-350

NAVY PUBLIC WORKS CENTER  
GREAT LAKES, ILLINOIS

ASSESS THE EXTENT OF ENVIRONMENTAL  
CONTAMINATION AND CONSEQUENCES OF THE  
PROPOSED DISPOSAL OF THE RIFLE RANGE

BY

ENVIRONMENTAL BRANCH  
UTILITIES DIVISION  
NORTHERN DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND

SEPTEMBER 1984

Report Submitted By,

D. R. SMITH  
D. R. SMITH  
Environmental Engineer

Report Reviewed By,

A. RHOADS  
A. RHOADS  
Head, Environmental Protection Section

Report Approved By,

R. GILLESPIE  
R. GILLESPIE P.E.  
Head Environmental Branch

## PURPOSE

The purpose of this assessment is to determine the extent of environmental contamination of the 14.15 acre rifle range located at the north eastern corner of Great Lakes Naval Training Center. This property is excess of the Navy's requirements and is being considered for sale through the General Services Administration (GSA). The rifle range is currently being utilized by the Department of Justice's Federal Bureau of Investigation (FBI) under the use agreement N62472-84-RP00203 with the Department of Navy. Termination of the use agreement requires the mutual consent of both parties, the Navy and the FBI.

## DISCUSSION

The Navy purchased this property in 1918. The land has been used by the government as a rifle range since that time. A number of associated capital improvements have been made; the most notable improvements being the construction of the pistol range in 1941 and the construction of the FBI range classroom facility in 1981.

Northern Division Naval Facilities Engineering Command (NORTHNAVFACENGCOM) Environmental Branch Representatives Mr. Allen Rhoads and Mr. David Smith conducted an initial site visit/investigation on 24 August 1984. The initial visit was for gathering information which Navy Public Works Center (PWC) and Naval Training Center have regarding the utilities and environmental conditions of the rifle range and also to do a visual inspection of the site. The Northern Division representatives met with the following personnel:

Irene MacDonald	Staff Civil Engineer's Office, NTC Great Lakes
Brad Bailey	Utilities Department, PWC Great Lakes
Ken Endress	Northern Division Liaison PWC Great Lakes
Jim Gibbs	Special Agent, FBI

The NORTHNAVFACENGCOM team verified that the Navy does not have any Polychlorinated Biphenyls (PCB) transformers or other electrical equipment at the site. The electrical equipment is owned and maintained by the electrical utility company, Commonwealth Edison. It was also determined that the sanitary sewage flows directly to the North Shore Sanitary District's (NSSD) Sewage Treatment Plant located along the north property line of the sites. NSSD is not billing the Navy for the treatment of the sewage from this site. The potable water is being supplied by the City of North Chicago, also at no cost to the government.

Unfired rounds of old ammunition and other ordnance items were found, during the visual inspection of the site. These items were heavily oxidized and rust covered. It was indicated that rounds/ordnance are frequently found through out the site. It appeared that the items are imbedded within the soil and surface periodically due to erosion. The FBI will routinely collect these rounds and periodically detonate/demilitarize the items. Mr. Gibbs stated that rounds, shell casings and other ordnance items were found during excavation for the FBI range classroom facility foundation. If the land use of this site is changed, a serious safety hazard would exist unless the Navy has the entire area swept for ordnance and disposes of

found ordnance properly.

A potentially serious environmental hazard was, also, observed during the inspection. This hazard is the presence of large quantities of lead from the range operations. The lead which is exposed to a variety of weather and environmental conditions has a good potential for contaminating ground and surface waters. Any lead and lead compounds migrating from the site will most likely impact the aquatic ecosystem of Lake Michigan adversely. An A/E study would be necessary to determine the actual degree and extent that lead has contaminated the ground and surface waters. The study would require as minimum the development and collection of following information:

- o Site Hydrogeology/Geology
- o Lead analysis of soil borings
- o Analysis of groundwater (installation and development of a minimum of three monitoring wells)

The cost for this A/E study is estimated to be between 20-25 thousand dollars.

#### CONCLUSION AND RECOMMENDATION

It is recommended that the property be retained by the Navy or be decontaminated/demilitarized prior to disposal (sale).

Reference (a) states that "Property will normally be retained if decontamination costs will exceed the fair market value of the property after restoration to unrestricted use...". The estimate cost for demilitarizing the site is \$554,000 (see enclosure (1)). The study to determine the extent of lead contamination is needed before a cost estimate for site decontamination can be developed. The range of cost for decontaminating/controlling contamination from the site is from no cost to three quarters of a million dollars or more.

Naval Training Center, Great Lakes in coordination with Naval Facilities Engineering Command's Real Estate Division and Environmental Quality Division should evaluate and determine if sale of the property is in the best interest of the Navy based upon the estimated demilitarization cost plus the possibly large decontamination cost. If a good cost estimate for decontamination is needed for this evaluation, the A/E study of lead contamination will be required first. NORTHNAVFACENGCOM Environmental Branch will prepare the scope of work and administer the contract upon notification from NTC Great Lakes that appropriate funding is available for the study (\$25k).

Potential lead contamination from rifle ranges is a Nation-Wide Navy/Department of Defense problem. NORTHNAVFACENGCOM will therefore, request that NAVFACENGCOM fund a study to determine if lead contamination from rifle range operations is adversely impacting the environment and whether site specific lead contamination studies should be performed/required even if the site is not being sold.

This Command can administer the engineering and contracting of site demilitarization and decontamination, if the evaluation indicates that it is economically feasible to dispose of the property. If the decision is made that the property should be retained, it is recommended that NTC Great Lakes consider transferring the property to the Department of Justice for restricted use as an ordnance training facility.

REFERENCES:

- a. NAVFAC P-73, Real Estate Procedural Manual; Chapter-6; pp. 23-5, 23-6;
- b. FONECON(S) btwn H. Dodohara (Ordnance Environmental Support Office) and D. Smith (NORTHNAVFACENGCOM) of 5&6 Sep 1984.

ENCLOSURES:

- (1) Cost estimate for demilitarization of rifle range

## COST ESTIMATE FOR DEMILITARIZATION OF RIFLE RANGE

The property is approximately 14.15 acres with Foss Park along the southern boundary, North Shore Sanitary District (Sewage Treatment Plant) along the northern boundary, Lake Michigan forms the eastern boundary and Foss Park Avenue and Elgin, Joliet and Eastern Railroad are the western boundary (see attached drawing).

The rifle range has two main earthen berms, one at a distance of 100 yds and the other at 200 yds. There are also side berms. An abandoned pistol range with berm was located on north side of the property and is now being used by the FBI as a parking area.

### ASSUMPTIONS:

- o Total property is to be demilitarized by Explosive Ordnance Disposal (EOD) team to a depth of approximately 3 feet.
- o Total volume of all berms is to be demilitarized by EOD team.
- o Cost for demilitarization is \$5/cu.yd for first 2 ft of soil and \$10/cu. yd. beyond 2 ft. depth per reference (b).
- o The size of the berms at the active rifle range are estimated based upon the visual inspection to be approximately the dimensions indicated in the attached drawings.

### CALCULATIONS

- o Volume of total property to depth of three feet

$$V_p = 3\text{ft} (14.15 \text{ acres}) (4840 \text{ sq.yd/acre}) (1 \text{ yd}/3 \text{ ft})$$
$$V_p = 68486 \text{ cu. yd.}$$

- o Volume of berms

$$V_b = 130 \text{ yd} [1/2 (1\text{yd} + 7\text{yd})(6\text{yd}) + 1/2(4\text{yd})(6\text{yd})]$$
$$V_b = 4680 \text{ cu. yd.}$$

- o Cost for Demilitarizing

$$C = 2/3V_p (\$5/\text{cu. yd.}) + 1/3V_p(\$10/\text{cu.yd}) + V_b(\$10/\text{cu. yd.})$$
$$C = \$503,373$$

- o Total cost including engineering, contract administrative and contingency

$$C_T = C + 10\% C$$
$$C_T = \$554,000$$



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EASEMENT IN STATE OF  
ILLINOIS FOR  
PURPOSES

LEASED TO JOHNNY  
GARE FOR CO

RIFLE RANGE  
200 YDS.

PISTOL  
RANGE

200 YDS

777 777

F. O. S. I. S.

NORTH SHORE SANITARY DISTRICT

LAKE MICHIGAN

REVOCABLE PERMIT TO CITY  
OF NORTH CHICAGO FOR ROAD  
ACCESS

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WIM CHICAGO  
LINDER CO